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Action: Arctic Environmental Strategy

Progress Report



ACTION

Arctic • Environmental • Strategy

PROGRESS REPORT

APRIL 1993 - MARCH 1994



Introduction

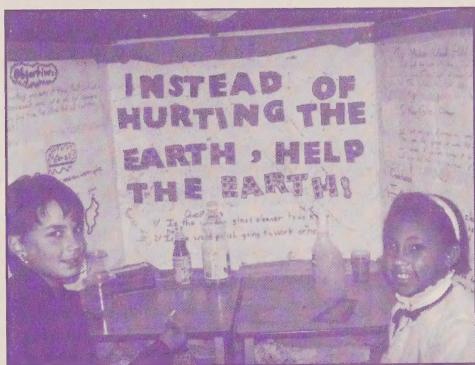
The Arctic is a place of immense natural beauty. This vast area, home to many Aboriginal societies and the vital habitat of countless wildlife species, is not as pristine as it once was. Industrial development and other human activities are threatening its delicate balance.

Protection of the environment in the Canadian Arctic is a responsibility of Indian and Northern Affairs Canada (INAC). Through the Arctic Environmental Strategy (AES), INAC is rallying forces to meet the challenge. Described as "sustainable development in action," the Strategy successfully combines environmental achievements while providing economic benefits to northern communities.

The Strategy, a six-year plan, is going into the second half of its mandate. How is it doing so far? Its strong commitment to working with Aboriginal and northern peoples to protect the environment is keeping it firmly on track.

Spearheaded by INAC, the Strategy:

- emphasizes community participation and the active involvement of First Nations in decision making;
- contributes to the northern environmental information base;
- enables communities to take an active role in clean-up and other environmental activities with a minimum of red tape;
- plays a key role in introducing cost sharing with other public and private agencies; and
- provides economic benefits in the territories.



Students at Joamie School in Iqaluit display one of their many environmental projects.



Since 1991, AES has involved virtually every territorial community in one or more environmental projects. More than 900 waste sites have been identified of which about 400 have been cleaned up. It has also helped to develop a northern labour market for environmental activities.

• SPRING • 1994 •

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It's the Kids Who Will Make the Difference

Nowhere is the evidence of awareness and action more impressive than in the classrooms of Joamie School in Iqaluit. Students there are setting the pace for all of Canada. Joamie has become the first school in Canada to complete at least 1,000 projects concerning the environment, many funded by the AES. Joamie projects included recycling, energy and water conservation, setting up an environmental resource library and an environmental adventure camp. One class even adopted a piece of land and a pond to study and take care of...their own biosphere. Joamie has made a good start and is helping to inspire kids with real lifestyle changes that will make a difference in their and our future.

AES has provided jobs in project management, heavy equipment operation and support services. Local businesses and suppliers were contracted to provide services in support of AES components. Employment opportunities were created in waste clean-up projects and water sampling. Contracts were given for the use of charters to support these activities. Last year alone, in the Northwest Territories, more than 250 northerners got jobs from the Action on Waste component, including about 60 summer jobs for students. These are examples of the AES's direct economic benefits to the North.

Even though the jobs created are not long term, AES serves as a catalyst for

future benefits in the form of new northern business initiatives. These initiatives will provide capital investment and further employment to northerners while promoting sustainable development in the North. The Strategy is also helping to educate northerners and to increase the ability of northern communities to manage their own resources. It heightens awareness of the need for protecting the northern environment for future generations.

The federal government has committed close to \$100 million to this six-year strategy. Supplemented with support from communities and the private sector, this combined effort reflects the recognition, by all the partners, of the urgent need to act and to act quickly. The focus of the Strategy is on four specific areas:

- water
- waste
- environment/economic integration
- contaminants.

Now, with the Strategy moving into the second half of its mandate, work is being stepped up to seek out the origins of contamination and to find ways to reduce contamination at its source, reduce and clean up hazardous wastes, sign and implement water quality agreements and refine environmental action plans to increase local community awareness and the ability of communities to meet these challenges. Another important goal is to work with other nations to reach agreements, or protocols, to control activities both within the Arctic and internationally that might have an impact on the environment.

Planning for the Future

There is still very little industrial development along the Liard River which collects its water from British Columbia, Alberta, the Northwest Territories and the Yukon, but the potential is there. Much of the information being assembled at five testing stations will be used as baseline data to monitor the negative impacts of development on the river and its waters.

ACTION ON WATER

Goal:

To:

- expand water quality and quantity monitoring networks and northern laboratory facilities; and
- conduct in-depth site-specific projects in response to community concerns.

Action:

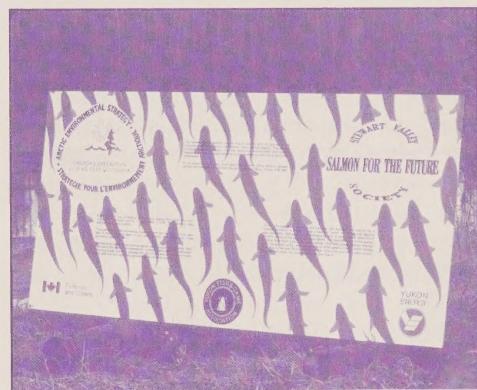
Sixty-seven water quality stations, 22 water quantity stations and 50 snow sampling sites have been established. Specific projects have been undertaken in response to the problems identified by research and by people living in the North.

Comment:

Water research provides information on the impact of development which is critical to land claim negotiations. It improves flood monitoring, encourages community participation, provides some local training and employment through the hiring of lay samplers and through local business contracts, contributes to the good health of northerners and to the traditional way of life of First Nations, and provides information used primarily by the mining industry.

Did you know that almost 85 percent of Canada's land mass drains through north-flowing rivers? Activities in the south, therefore, can seriously affect northern ecosystems. For example, the Mackenzie River Basin includes rivers flowing from British Columbia, Alberta and Saskatchewan up to both territories. Any pollution from one area may have a major effect all through the system. With development planned for the Basin, it is crucial to know the quality and quantity of the water now and in the future. Changes can then be assessed and tracked to their sources more easily.

In the last year, there were 32 studies addressing community concerns. Most seek simple but critical answers to questions such as: Can we drink the water? Can we eat the fish?



Mayo Fish Enhancement Project sign.

The Kluane First Nation raised a concern about a sewage discharge at the Destruction Bay sewage lagoon. A poorly designed septic system was to blame, and remedial action has been taken.

Under AES, the causes and volumes of contaminants in arctic waters are being studied. The Water Resources Division of INAC and the National Water Research Institute (NWRI) of Environment Canada have established 14 sampling stations on rivers that flow directly into the Arctic Ocean. There are also five snow sampling stations across the Northwest Territories. This testing will help determine how much contamination is flowing directly into the ocean, which chemicals are coming from outside the Arctic, and how northern rivers will be affected by increased pollution.

Now, more than 100 testing sites across the Arctic are set up for taking water and snow samples. Hydrologic studies are also planned for the eastern and high arctic watersheds.

The results of the water quantity program will influence the design of water intakes, waste management facilities at mine sites, the construction of bridges, culverts and tailing ponds, the design of pipeline crossings, the feasibility of hydro-electric developments and assessments of the impact of development.

Concerns about water quality frequently originate with people living in remote communities. To address these concerns, a lay sampler program has been set up.

What are lay samplers and what do they do that is so important? Some community residents are trained and hired to take water samples, according to set standard procedures, for water analysis. The objective is to have one or two people in each community who regularly collect

water samples from predetermined locations. Regular and accurate testing helps to show if the water quality is being maintained in the lakes and rivers.

In the Northwest Territories, research analysis is done at the Northern Analytical Laboratory in Yellowknife — the only water and wastewater testing facility in the North. Expanded and upgraded with AES funds, the lab conducts enhanced research including mercury testing in fish and sediment. Further testing is carried out at the National Water Research Institute in Burlington, Ontario.

With all this information, the Action on Water Program is able to provide a wealth of data on the quality and quantity of northern waters. This research provides the essential foundation for environmental assessments, remediation and flood prediction, and will provide northerners with clear and reliable information on levels of contaminants in water, fish and seafood.

An important component of the Action on Water Program is the federal and territorial governments' work on water quality agreements. These agreements commit the various governments to work together on cost-shared water networks.

Industrial Co-operation

Mining companies in the North have been provided with instrumentation for measuring evaporation at tailing ponds. The data they collect will help companies do a better job in guarding the environment. For example, one research project is using oxygen and

hydrogen isotopes to measure water evaporation rates. The results of this project will influence the design and operation of future industrial enterprises such as mines. Why? Because rock and water left over from ore processing are poured into tailing ponds. The solids settle, and the water is treated for contaminants before being discharged into waterways. Knowing evaporation rates will help determine if there is enough water in the tailing ponds to reduce contamination risks.

A tiny graveyard at Devil's Channel surrendered its mantle of debris last year when summer students cleaned up the grounds around 30 graves. The students, employed by the Metis Nation of the Northwest Territories, hauled out 200 plastic bags of garbage, thousands of kilograms of rusting metal, fuel drums, fishing nets and one Bombardier track as part of the project funded by the Arctic Environmental Strategy. Borrowing a boat and barge, they hauled the debris over 95 kilometres east to Yellowknife for disposal.

ACTION ON WASTE

Goal:

To:

- eliminate hazardous and unsightly material abandoned in the North; and
- start a long-term commitment to keep the North free of waste.

Action:

In 1993-94 in the Yukon, 154 sites were cleaned up; in the Northwest Terri-

tories there were 76. About 250 short-term paying jobs were created in the Northwest Territories by these initiatives.

Comment:

Before 1972, there were no regulations governing the use of land in the territories. Government, industry and private citizens brought in vast quantities of material and equipment, and once projects were completed, the residue was abandoned because it was considered too expensive or unnecessary to remove.

"Out of sight, out of mind" has meant a northern landscape dotted with waste sites containing everything from fuel drums to a chemist's list of hazards. This waste not only poses a possible risk to people, wildlife and the environment, but also deters tourists who expect a pristine Arctic.

Although the money from the Arctic Environmental Strategy isn't enough to complete all the clean-ups, it is making a big difference.

The very genuine hands-on nature of the Action on Waste segment of the Strategy, and a minimum of red tape, have ensured strong local participation involving First Nations, industry and volunteer input from communities, individuals and businesses.

To date, about 900 waste sites have been identified in the North, most have been assessed for level of contamination and over 400 have been cleaned up. Sites that contain hazardous materials get priority attention.

Most of the work is being done by northerners themselves. Residents are

enhancing their skills in running programs and in operating heavy equipment, metal shredders, compactors and other machinery, used in reducing or eliminating waste. Metal shredders have been used in the Northwest Territories now for over a year, and one has been purchased for the Yukon. These machines turn waste metals into saleable materials and reduce the volume of other waste to a fraction of its former volume. As well, they allow the territorial governments to improve future management and size of municipal dumps.

Two Aishihik residents are among a rare group of northerners who specialize in the safe removal of asbestos. Their training was paid for by the Arctic Environmental Strategy as part of an agreement with the Champagne/Aishihik First Nations to clean up a World War II military airstrip and base. Their job is to remove the asbestos, double-bag and bury it.

In all, five or six members of the First Nations will be involved in the project at the north end of Aishihik Lake. Extremely remote, the area — of great importance to the First Nations as a retreat — is without a power supply, and workers will be exposed to the extremes of northern weather.

Chief Paul Birckel said: "After all these years, the clean-up of all the toxic materials in the Champagne/Aishihik area is finally getting done."

Communities have also increased their experience with business management including contracts, applications and tendering processes. This experience has helped build a local capacity which will assist them in taking on other jobs.

About 90 percent of the smaller projects have been completed by Aboriginal groups or local contractors such as First Nation communities, summer students or hunters and trappers associations.



Barge load of garbage collected by students during the Metis Nation summer clean-up of the Great Slave Lake.

A highly successful project was undertaken by the Metis Nation to clean up the commercial fishing grounds around Great Slave Lake. Over 60 students have been hired over the last few summers to participate in the project. The students were keen to help and worked long, hard days. Once they saw the results of their labours, they felt a great sense of pride in what they did. The lake shore is now a lot cleaner. But best of all, the whole community and the fishermen benefit from a better environment and cleaner lake. The Metis have launched an intensive education campaign to prevent a recurrence of the problems.

Local contractors and the territorial government in Rankin Inlet tackled the tailings at an abandoned nickel mine at an estimated cost of \$2.5 million. At Coral Harbour, a refuelling depot during World War II, there are 250,000 barrels and 60 years of other abandoned materials. It will take about four years for members of the community, employed through the AES, to clean it up. Another activity included the asbestos clean-up of a long-abandoned military airstrip and base.

In the Yukon, a heap of barrels was found at the bottom of Watson Lake; others were strewn over a wide area. The barrels were collected and stockpiled at central locations for future handling. Also, the first joint Canada-Yukon Environmental Accord clean-up project dealt with a PCB spill in Whitehorse.

Although there aren't enough funds for the entire clean-up of the North, contributions from private sources are stretching the dollars. More challenging than cleaning up waste, however, is to help change lifestyles to ensure waste is kept to a minimum in the future. The Arctic Environmental Strategy is part of that learning process by helping communities become aware of the problems and maintaining peoples' interest in a cleaner future.

ACTION ON ENVIRONMENT/ECONOMY INTEGRATION

Goal:

To:

- provide economic opportunities built on traditional values, knowledge and resources, that are in balance

More than lively lyrics and musical notes can be heard in the students' voices in the rock video *A Fish's Tale*: they are a metaphor for the North's response to the Arctic Environmental Strategy.

The rock video, *A Fish's Tale*, is part of the awareness building, dealing with household hazardous waste. Ms. Snyder, co-producer, began working on the idea three years ago. She is with Raven Recycling in the Yukon and recruited fellow producer Chris Clarke along with other partners: YTG Renewable Resources, City of Whitehorse, Canadian Airlines International and EM Media of Calgary with funding from the Arctic Environmental Strategy.

A Fish's Tale has a perturbed fish emerging from the river to protest against the household wastes flushed into its aquatic home. The première was held in March at the Whitehorse Art Centre, and the Whitehorse School Board will distribute it to all Yukon communities. Plans are now under way to produce a handbook to go with the video.



Cast of A Fish's Tale

- with environmental concern for northern communities; and
- base environmental decisions on scientific and traditional knowledge.

Beluga whales, battling industrial activity in their own backyard, are getting help from the Arctic Environmental Strategy to survive and multiply. The Beaufort Sea Beluga Management Project hopes to protect these popular and valuable whales from the harmful emissions of industrial development and the unwanted attention of curious tourists. Part of the work includes the development of guidelines for eco-tourism in the Inuvialuit Settlement region.

For generations, beluga were a key source of food and clothing for the Inuvialuit who, until recently, harvested just enough for their needs. But industrial development, mining, shipping and water port activity creates concerns about the quality of the water and a possible reduction in the food available to the whales.

Brenda Kuzyk, sustainable development advisor to AES, says: "With migration routes passing through these development areas, belugas may be at risk."

Local residents are assisting in the management project by providing details of the number of whales caught or lost. A quota has been established to ensure that the total catch remains within an allowable level.

Action:

Through its three programs — the Community Resource Management Program (CRMP), the Environmental Action Program (EAP) and the Northern Information Network (NIN) — this component of AES has demonstrated a new way to do business in the North. The bureaucratic process has been pushed into the background in this program by reduced red tape, its emphasis on partnership and its determination that northern communities develop and do their own projects.

Comment:

These programs have an outstanding reputation in the territories. Ninety percent of CRMP and EAP projects have achieved the goals they identified at the outset — a very high success rate. Funds for this work go directly into northern communities as contribution agreements with band councils, hunters and trappers associations, and other community groups.

In addition to bringing economic benefits and increased awareness, the creative approach underlining this AES program is sprouting new ideas for management of resources and sustainable development-inspired projects.

- In 1993-94, in the Yukon there were five First Nation CRMP projects with funding ranging from \$25,000 to \$70,000. One project involved the Mayo District Council's desire to increase the Chinook salmon in several rivers through a salmon enhancement project.
- In 1993-94, 24 projects were launched in the Northwest Territories, bringing the total ongoing CRMP

projects to 37. Currently 42 of 63 communities in the territory are involved in such activities, and projects range from managing a single resource, such as polar bears or char, to timber harvesting and eco-tourism. One project included the Deninu Ku First Nation which helped train band members in fisheries management techniques.

- In the first two years of the Strategy, 260 EAP projects were funded in the territories. They included recycling, education, small clean-ups, nature trails and workshops. Many featured partnerships, and the co-operative action drew maximum benefit from investments. Given the nature and small size of these projects, virtually all the funding provided was spent in the territories.

But best of all, upwards of 80 percent of northern communities now have recycling projects which shows a fundamental shift in attitude and the realization that individuals in the North can do something about their own environment.

The degree to which children are involved in the Arctic Environmental Strategy will ensure a legacy of new attitudes and awareness of sustainable development.

- Grade 10 students in the Dene community of Fort Good Hope began an environmental newsletter which deals with local issues, while providing students with journalistic and ecological experience. Through interviews with elders they are learning the importance of applying their traditional environmental and ecological knowledge.
- At Pangnirtung on Baffin Island, two schools set up a paper recycling

project, using a paper shredder provided by AES funds. They gather waste paper, shred it and give it to the Inuit Co-op for packaging sculptures to be shipped south — replacing the styrofoam that had been used before.

- In the Yukon, educational projects include composting projects with worms to recycle household organic wastes, plus many more.

Northern Information Network — the North's Electronic Superhighway

Electronic information highways are crisscrossing the whole world now. The North has its own electronic infrastructure, cutting travel time to seconds for users looking for useful and interesting information on the Arctic. Essential to the AES is its reliance on and encouragement of information sharing. The Northern Information Network (NIN) has been developed over the last three years to give northern decision makers and researchers easy access to traditional and modern knowledge of the area. It now contains 430 geographically based data systems owned by universities, business, government and non-government organizations. Linking researchers across Canada reduces duplication of research and information gathering. In the next two years, NIN will complete a review of all its pilot projects. Its next challenge is to make sure that more northerners know about the network and how to use it.

ACTION ON CONTAMINANTS

Goal:

To:

- evaluate the risks of environmental contamination to human health and the arctic ecosystem.

Action:

To date, more than 220 projects have been undertaken. This includes 64 projects which were started this year.

Living off the land, a traditional way of life for so many northerners, may one day be a problem because of increased contaminants in a landscape often so deceptively unsullied in appearance.

Comment:

Northerners, particularly First Nations, applaud the innovative partnership arrangement giving Aboriginal peoples "...more than input, it makes us part of the decision making."

The Arctic cannot protect itself from the major sources of pollution in its waters and atmosphere. How does the pollution get to this remote area? Pollution is carried to the Arctic from north-flowing rivers, winds and ocean currents from all over the globe.

That is why perhaps the most challenging of the components within the AES is Action on Contaminants which concentrates on research into pollution and ensures that information is conveyed to northern residents. The work is carried out with the full participation of northerners and under the direction of a committee, which includes governments and all five northern Aboriginal groups: the Council for Yukon Indians, the Inuit Tapirisat of Canada, the Dene and Metis of the Northwest Territories and the Inuit Circumpolar Conference. The Committee makes research project selections, decides on priorities and

ensures that information is communicated back to the appropriate communities.

In collaboration with the other AES participants, the Native partners developed the Guidelines for Responsible Research, a framework of basic ethics for conducting research in the North. Following these guidelines will now be a condition for research project funding.

The Aboriginal partners are also part of the founding board for the Centre for Nutrition and the Environment of Indigenous Peoples at McGill University in Montreal. The Centre, funded by the AES, will play a key role in conducting research into contaminants and the health and nutrition of northern people.

About 220 research projects have been undertaken since 1991 by the Arctic Environmental Strategy to track contaminants and to measure their impact on northern ecosystems and on human health. The results of this research are providing powerful ammunition to help convince foreign countries to reduce the pollution heading to the Arctic from their countries.

In the next two years, research on contaminants will continue. The focus will be on the sources and pathways of contamination, its absorption into the ecosystem and its effect on wildlife and on human health. Although this all sounds very technical, it means that studies will continue to be conducted in northern communities to evaluate health risks due to contamination of traditional Native food.

There are some specific projects of note in the Yukon and Northwest Territories.

- Fish, water and sediments were tested in Great Slave Lake, Liard River and Yellowknife/Back Bay for contamination, with particular scrutiny for harmful chemicals and metals.
- A contaminants workshop drew 170 people to discuss future contaminant research in the Yukon. (Results were very favorable.)
- A study of mercury levels in the Mackenzie Basin was undertaken to ensure the health of the fish and the people who depend on them for food.
- The Yukon Contaminants Committee assisted Health Canada with health advisories and with direct research to ensure long-term use of harvested food.



Yukon Contaminant Workshop.

In addition to the health benefits of identifying and reducing contaminants in the traditional food supply, there are also clear economic benefits. Without a reliable source of country foods to harvest, northerners would be forced to

substitute southern foods for their traditional country food. It has been estimated, that if this ever became necessary, it would cost northerners an additional \$50 to \$60 million annually.

INTERNATIONAL ACTION

Since some of the pollution is carried from other countries, can anything be done? The Action on Contaminants component has provided Canada with the knowledge and resources to take a lead role in pushing the international agenda on reducing international sources of pollution affecting arctic regions.

In the international community, Canada is a leading nation in agreements for protecting the arctic environment. The Arctic Environmental Protection Strategy (AEPS) and the Arctic Monitoring and Assessment Program (AMAP) are initiatives agreed to under the 1991 Declaration for Protection of the Arctic Environment, which was signed by the eight circumpolar nations including Canada.

Canada chairs the Arctic Monitoring and Assessment Program, and co-chairs with Sweden, a United Nations Task Force on persistent organic pollutants. By November 1994, based on a report prepared by the Task Force, a decision will be made on an international protocol for controlling emissions of persistent organic pollutants from 48 countries.

As another part of its contribution to international action, Canada also helped build an atmospheric monitoring station in the Lena River delta of Russia. This station includes

technology developed and installed by a Canadian company and, with support from the federal government, will join with Canadian stations to provide a clearer picture of atmospheric change affecting all circum-polar nations.

CONCLUSION

The Arctic Environmental Strategy is fulfilling its mandate in a number of ways. It:

- involves northerners and their communities in all program phases, decisions and delivery;
- promotes the sharing of information;
- encourages broader co-operation and participation by individuals, communities, business and education sectors and other public and private agencies;
- contributes to the protection of traditional lifestyles;
- enhances education and training; and
- promotes innovation and provides economic and employment benefits to the North.

The Strategy is spreading the message across the Arctic: Good environment is good business. It has galvanized the territories into co-operative action that sets an example for the rest of Canada.

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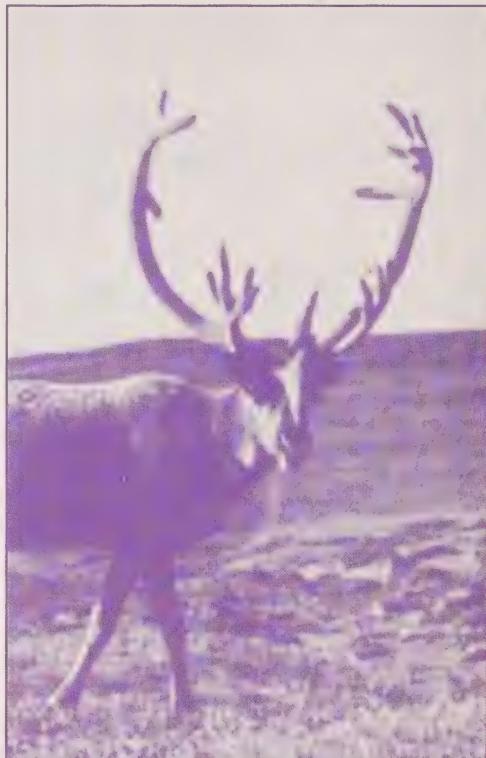
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ACTION

Arctic • Environmental • Strategy

PROGRESS REPORT APRIL 1994 - MARCH 1995

Introduction

The Arctic Environmental Strategy was launched in 1991 with a six-year mandate to preserve and enhance Arctic ecosystems for present and future generations. The four principal areas of action are:

- On contaminants — to reduce, and where possible, eliminate contaminants in traditionally harvested foods;
- On waste — to eliminate hazardous and unsafe waste;
- On water — to improve the management of water resources; and
- On the integration of environmental and economic issues — to promote economic opportunities for northern communities which take advantage of traditional values, knowledge and resources.

The Department of Indian Affairs and Northern Development (DIAND) is responsible for protecting the environment of the Canadian North and coordinates the Arctic Environmental Strategy (AES). The Strategy:

- emphasizes community participation and the active involvement of Aboriginal peoples;
- contributes to the northern environmental information base;
- enables communities to take an active role in clean-up and other environmental activities with a minimum of red tape;

- plays a key role in introducing cost-sharing with other public and private agencies;
- provides economic benefits in the northern territories;
- assesses the risk of contaminants to northern ecosystems and human health.

It's a daunting task. The Arctic comprises 40 percent of Canada's land and 30 percent of its freshwater, yet its population of about 86,000 is small and widely dispersed. So far:

- research projects have been undertaken each year to identify the sources of contaminants, how they reach the Arctic, the extent of ecosystem uptake and resulting effects;
- an inventory of about 1,246 waste sites — 477 of which have been cleaned up, including more than 200 suspected of containing hazardous wastes;

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• 1995 •



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Canada

- 90 water quality and water quantity stations have been established, 49 studies have been completed and about 360 environmental projects ranging from clean-up to recycling and awareness-building have been undertaken by northern residents.
- community resource management projects administered by communities, integrate management of the environment and the economy by conserving resources for the future at the same time as promoting economic development.

For northern residents, the Strategy is offering economic opportunities as well as a safer environment. Emphasis throughout has been on hiring northern people and using other resources where possible in undertaking research, communications and remedial actions. Local businesses offer services, individual projects provide jobs, and increased awareness is stimulating business development and growth.

These elements are critical at a time when change is occurring rapidly, hastened by Aboriginal land claim settlements and the devolution of federal controls to territorial governments. Canada's AES shows that partnership works. AES partners are working together in a sustained and concerted environmental effort. AES has also been strengthened by enthusiastic community and private sector support.



Expectant Mothers Help Check Contaminants in Blood

Expectant mothers have become partners in tracking environmental contaminants as part of their prenatal care at the Stanton Yellowknife Hospital.

As many as 350 women from the Mackenzie and Kitikmeot regions are participating in the Maternal and Cord Blood Sampling Program under the Arctic Environmental Strategy. All volunteers, the women have consented to have their routine blood samples tested for contaminants such as PCBs, mercury, lead and cadmium. Maternal results are compared with contaminant levels in the umbilical cord of the newborn.

Regional Co-ordinator Laura Seddon says the testing checks the kinds and levels of contaminants found among residents in the Northwest Territories and tracks which ones may be transferred to the fetus during pregnancy.

The program began in 1994 after extensive consultation among health officers, contaminant professionals and Aboriginal groups. It is delivered by regional health organizations in partnership with the territorial government and Aboriginal groups. Future plans include extending the program to the Baffin and Keewatin health regions.

"It would not be possible without everybody's co-operation, support and input," says Ms. Seddon. "The reaction to the program has been very positive. People hear about contaminants and pollution ... and want to know more. As well, women are interested in knowing their own results."

Expectant mothers are told about the program at their community health centres or clinics. If they agree to participate, they sign a consent form and provide diet and lifestyle information which helps determine the contaminants to which they could be regularly exposed.

Individual participants may receive their personal test results if they wish, along with information to help them understand the findings. In some cases, they may also receive information to help reduce future exposure to certain contaminants.

ACTION ON CONTAMINANTS

Goal:

To evaluate the risks of contamination to human health and the Arctic ecosystem.

Action:

Through an annual program, composed of more than 80 research projects annually, long-range transport of pollutants has been identified as a major source of contamination in the Arctic. The majority of the projects monitor contaminant levels in the Arctic ecosystem — in air, water, sediment, soil, animals and humans — and assess their effects on the ecosystem.

The past fiscal year, 1994/95, was the final year of northern field work in all but the human health components of the Contaminants Program. The Program is devoting increasing priority and effort to interpreting and synthesizing scientific findings of the past several years and, using easily understood and relevant terms, communicating these results to northern consumers and harvesters of northern traditional foods.

Comment:

All five Aboriginal groups — The Council for Yukon Indians, the Inuit Tapirisat of Canada, the Dene and Métis Nations of the Northwest Territories and the Inuit Circumpolar Conference — are directly involved in the management and delivery of the Program. They were also partners in developing the guidelines for research, a framework of basic ethics for conducting research in the North, and in the ongoing management of the Centre for Nutrition and the Environment of Indigenous Peoples at McGill University. The Centre's key role is to conduct research on contaminants and their possible impact on the nutrition and health of northern people.

At a public workshop on contaminants held in Whitehorse, Yukon scientists reported that worldwide use of chlorinated contaminants is decreasing and the monitoring of northern lake sediments suggests declines

Second Yukon Workshop on Contaminants Reports Progress, Raises Other Questions

While major questions remain unanswered, the second annual Yukon Contaminants Workshop received some encouraging news from scientists. There is evidence that worldwide use of chlorinated contaminants is decreasing and northern lake sediments suggest declines in toxaphene, PCBs and DDT.

Among the questions identified at the workshop:

- Are the levels of contaminants in the environment increasing or decreasing?
- What are the contaminant levels in the human tissue of Arctic populations?
- Are previous high inputs of contaminants such as DDT and PCBs contributing to high concentrations of contaminants in fish in Lake Laberge?

Long-range transport is contributing PCBs, DDT and toxaphene to the Yukon environment. While several initiatives are under way, evidence of improvements will be slow in coming particularly because pollutants from other countries are difficult to control.

Participants were told there is no risk from organochlorines associated with drinking water or from melted snow. These contaminants are also found in low levels in most fish in the Yukon. However, based on health hazard assessments, health officials have recommended limited consumption of burbot livers in Lake Laberge and Atlin Lake, and lake trout in Lake Laberge. Ducks and geese from the North also have very low levels of organochlorines.

In the areas sampled there appears to be no risk related to mercury in fish. Cadmium in caribou meat is low in all regions studied except in the Ross River area due to naturally higher levels in the soil.

Participants were told that the many benefits of traditional foods must be taken into account in formal health assessments and that the communities must be involved in the process.

in Toxaphene, PCBs and DDT. Among the questions still unanswered are whether environmental contaminants in general are increasing or decreasing, and what are the levels and effects of contaminants in humans?

During the next two years, emphasis will be placed on determining the health impacts of contaminants and communicating information about contaminants to northern residents. Some work is already under way. In 1994, through the Stanton Yellowknife Hospital, several hundred expectant mothers became partners in tracking contaminants. These women, from the Mackenzie and Kitikmeot regions, have agreed to have their regular blood samples tested for PCBs, mercury, lead and cadmium.

Communications efforts are being tailored specifically for the North, providing practical information and encouraging northerners to participate in environmental protection. Most have been produced through the services of Aboriginal or northern-based groups that incorporate their specialized knowledge of culturally appropriate communications techniques and strategies.

ACTION ON WASTE

Goal:

To eliminate unsafe, hazardous and unsightly waste abandoned on Crown lands in the North.

Action:

There are 1,256 locations now in the waste sites inventory, 217 of which are considered or suspected to be hazardous. These hazardous sites are receiving priority treatment. In the first four years of the strategy, 477 sites were cleaned up with the bulk of the work being done by northerners, Aboriginal groups or local contractors. In 1994-95, 175 sites were cleaned up.

Comment:

Public awareness and community action are major factors behind impressive progress being made to clean up waste sites in the Arctic. The heightened sensitivity is prompting actions such as those undertaken by teacher Rawley Garrels of Cambridge Bay who, with the help of his students, has

Dream Comes True on Clean-up

When Dave Newton was nudging barges into place on Great Slave Lake last summer, it was a dream come true.

Mr. Newton joined Public Works Canada in 1981 as a deck hand on the *Hugh A. Young*, launching a dream to one day captain the boat.

Last summer, the *Hugh A. Young* was refitted and assigned to the joint DIAND-Métis Nation environmental clean-up of Great Slave Lake — with Mr. Newton as captain. The refitted boat towed barges carrying clean-up equipment to various spots on the east arm of Great Slave Lake. One of the barges carried a 500-horsepower metal shredder to shred abandoned steel drums while others carried a mobile camp and two incinerators — one for regular debris and the other for waste oil.

"This is a 100 percent positive project," he says after a summer of towing. Among the sites cleaned up were abandoned mines at Outpost Island, De Staffan Mine and Copper Pass.

It was the third year of the clean-up operation by the Métis Nation. Funding was provided by the Arctic Environmental Strategy and Public Works and Government Services Canada provided boats, barges and crews.

Another positive result of this project was that a dozen students received training in handling hazardous wastes and in marine operations during the 1994 project. "The students on the project have a thirst for knowledge and a freshness. They say things which make me more aware of the environment. I never realized there was that much garbage around." Two other students worked with Mr. Newton as trainee deck hands. Maybe another dream has been born.



Barges haul barrels from waste sites.

spearheaded clean-up projects. For the past three years, the students have been passing on environmental protection messages to their families and other students.

Community action has started in dozens of areas and local residents have revealed isolated waste sites not identified earlier in the inventory.

Work on the abandoned DEW Line sites illustrates the dimensions of the problem in areas where there were no regulations

DEW Sites Left Legacy of Sludge and Debris

Seven thousand barrels, some leaking sludge onto the Arctic tundra, were among the most visible signs of a DEW Line site abandoned 30 years ago along the Horton River.

They are gone now, as is a gravel conveyor, warehouse, garbage and the contents of two 2,000-gallon fuel storage tanks. More than 40 people from Paulatuk and Tuktoyaktuk in the Inuvialuit Settlement Region made short work of the debris last summer. It is the first of 42 DEW Line sites to be dismantled, helping this area return to a natural state.

Norm Sancartier, a resource management officer for DIAND, says the stockpile of barrels had been there since the 1960s, filled with oil, diesel fuel, gas and grease. Barrels with PCB contaminated material and soils were packaged and shipped to the Hazardous Waste Disposal Site in Swan Lake, Alberta. The remaining barrels were cleaned, crushed and removed.

"The walls of one of the buildings were contaminated with PCBs," says Mr. Sancartier. Some areas around the building had PCB levels higher than acceptable levels. Experts from Royal Roads Military College cleaned up the PCB-contaminated areas.

Soils contaminated with PCBs were also cleaned up at Sarcpa Lake and Pearce Point while preliminary work was completed at a communications site on Resolution Island.

Environmental assessments — the first step toward clean-up, were completed for all the DEW Line sites.

Walking the Talk On the Tundra

Schoolteacher Rawley Garrels of Cambridge Bay has a clean-up agenda that is building environmental awareness while removing debris from popular sites in the region.

Last year, Mr. Garrels and 14 students cleaned up a camping and fishing area at Wellington Bay on the Akanak River. This year, he and two students joined George Hakongak to clean up a fishing area on Kent Peninsula on Seashell Lake. And next year, he has his sights set on cleaning up campsites on the Thirty Mile River just west of Cambridge Bay.

"They were horrendous messes," says Mr. Garrels, who teaches at the Ilihakvik School. To restore the area to its former state, Mr. Garrels' crews burn what they can, crush, bury or remove the rest.

Students who become involved are required to pass along their new-found knowledge to others. Participants in the Thirty Mile Camp cleanup, for example, will produce posters and articles and make presentations to younger students.

Mr. Garrels quotes his grandfather who was the motivator behind his commitment. "I don't like going into the beauty of nature and seeing garbage. If I don't do anything about it, who will? My grandfather always said (that) if you don't do anything, you don't have a right to complain."

First Nations Tackling Waste

The Arctic Environmental Strategy is funding First Nations who want to undertake clean-up projects of waste sites near their communities, mirroring a highly successful 1994 project by the Dawson First Nation.

In the last half of 1994, the Dawson First Nation reclaimed 25 sites with a workforce of 10. They dealt with waste metal, abandoned vehicles, fuel tanks, aircraft wreckage, barrels, wood scraps and garbage.

Project manager John Mitchell says crew members were selected on the basis of their knowledge of the area which often led to the discovery and clean-up of previously unknown waste sites.

First Nations have been invited to propose co-operative action projects, between themselves and DIAND, to the Action on Waste Program of the Arctic Environmental Strategy.

governing the use of territorial land prior to 1972. The first of 42 DEW Line locations — 21 of which are DIAND's responsibility — has been completely cleaned up. Funds for the DEW Line clean-up were administrated through the AES Action on Waste Program. The project involved the collection and disposal of 7,000 leaky fuel barrels, and PCB and asbestos contaminated structures. At the same time, assessment and hazardous material clean-up were done at other DEW Line sites under DIAND's responsibility.

Most of the work on these projects has been done by northerners, including many Aboriginal workers. By working on such projects, many have gained experience and training in dealing with hazardous waste such as asbestos and PCBs.

Communities have increased their experience in business management including contracting, application approvals and the tendering process. This expertise lays the foundation for dealing with economic development in the years ahead.

ACTION ON WATER

Goal:

To expand water quality and quantity monitoring networks and northern laboratory facilities, and conduct in-depth water studies in response to community concerns.

Action:

The NWT DIAND Water Laboratory in Yellowknife — the only water testing facility in the North — now has an increased work capacity. As well, the expanded Laboratory is now able to determine mercury levels in fish and sediment. AES Action on Water has conducted 49 special studies, including 32 last year, examining issues such as trans-boundary pollution, sewage, drinking water, pulp mills and mine effluent.

Study Combines Experience with Sampling to Track Fish and Water Quality

The fish stories around Fort Good Hope are guiding scientists in their environmental study of fish and water quality in this community on the Mackenzie River.

Part of the Arctic Environmental Strategy, the Fort Good Hope approach is breaking with the traditional method of scientists coming in, taking samples and leaving to write reports. This time, the community is directing the study.

Murray Swyripa, aquatic specialist for DIAND, says: "It's their study. They're telling us what and where the problems are. They're driving us. We make the science fit the questions."

Patricia Pierrot surveyed about 20 fishermen last summer, asking questions about fish, the quality of fish now and in the past, locations and times of year when problems in fish appear and what changes they have seen over the years.

She says: "They're the ones who know most about the quality of the water and fish because they are the ones who set the nets."

The information guides scientists who, with the help of residents, are collecting water, sediment and fish samples to be tested for contaminants. Band Manager Barry Harley, blaming development upriver, says loche livers are now inedible and whitefish flesh is watery. The study is part of the Action on Water Program of the Arctic Environmental Strategy.

Comment:

Eighty-five percent of Canada's land mass is drained by north-flowing rivers. This means that southern activities can affect the quality of northern water. Development in the Mackenzie River Basin, for example, could have a major impact on the quality and quantity of water reaching the North. How that development is carried out can affect trapping, fish stocks, spring flooding and the movement of goods.

Historical Data Guide Provides Flood, Ice Predictions

Communities such as Old Crow, Dawson, Mayo and Ross River were built on flood plains and are often flooded during spring. Now a new computer program that can predict spring flood levels using snow and weather measurements over the winter will help these communities prepare for floods.

Water levels and ice-flow patterns at the newly constructed berm in the Yukon River at Dawson are contributing important data for a water resources computer program which will forecast spring floods.



Old Crow devastated by flood May 8, 1991

Martin Jasek, a Hydrometric Studies Scientist, uses his ice engineering background to assess ice-jam formations, ice movement and flooding. The data are important for community development projects such as bridges, berms and structures for floodproofing.

For example, with the Yukon River running at its lowest flow in 35 years, flooding wasn't likely in the spring of 1995. However, heavy rain, snap thaws and other conditions could have a bearing on the spring flow.

New flood forecasting models are also being created for Marsh Lake, Ross River and Mayo.

Site-Specific Data Guides Mining Operation

Precise meteorological data are helping mining companies and the federal government design more environmentally sound tailings ponds at mine sites.

Four stations have been established at Salmita, Nanisivik, Giant and Cullation Lake mines. The stations provide precise information on rainfall and other weather conditions at the mine site which is used to calculate the rate of water evaporation from the tailings ponds.



Evaporation equipment / data tower at Twin Lakes, Nanisivik, NWT.

Bob Reid, a DIAND hydrologist, says: "The rate of evaporation affects the amount of water that can be recycled from tailings ponds, which then affects the amount of fresh water that must be taken from other sources for the mill. Also, precipitation and evaporation rates at a mine site affect the long-term stability of the tailings pond when the mine closes."

Tracking the weather conditions becomes increasingly valuable depending on the length of time they are recorded. Before this study, DIAND used the more general information provided by regional weather stations.

To generate baseline data and monitor environmental conditions, 67 water quality stations, 22 water quantity stations and 50 snow-sampling sites have been established. Data collection has, for example, improved flood predictions in high-risk areas.

Thirty-two community-based studies undertaken last year demonstrate that economic activity affects the freshwater ecosystem. Potential impacts of mining operations, transportation, and sewage and waste disposal issues need to be considered and monitored to minimize their effects.

At Fort Good Hope, information obtained from local fishermen is being combined with scientific research to provide a profile of activities — such as oil development — which may have an impact on the quality and quantity of fish.

ACTION ON ENVIRONMENT/ ECONOMY INTEGRATION

Goal:

To provide economic opportunities for northern communities based on traditional values, knowledge and resources. To achieve better decision-making by using both scientific and traditional knowledge.

Action:

Through the Community Resource Management Program (CRMP), the Environmental Action Program (EAP) and the Northern Information Network (NIN), northern communities now have the opportunity to develop and implement their own projects. These programs emphasize partnerships and local accountability without bureaucratic red tape.

A total of 45 communities have been involved in 260 environmental projects of their own design and 42 communities have undertaken resource management projects.

Comment:

Communities have shown creativity and innovation in proposing and implementing programs. Their success rate is impressive.

- The Mayo District salmon enhancement project in the Stewart River System included a six-week count of salmon heading upstream and a study of Chinook fry. The project's purpose was to provide insight into the apparent declines in salmon stock and to determine measures that could reverse the trend. Their foresight in undertaking this project is commendable, given the recent decrease in fish stocks in other Canadian fisheries.

Whales Swim Safely

A 10-year mission to protect bowhead whales is expected to be completed in 1995 with the creation of the Igalirtuuq National Wildlife Area off the coast of Baffin Island. The population had dwindled from a historical level of about 11,000 to 300 or less.

Work to protect the bowheads began more than 10 years ago by the Clyde River Hunters and Trappers Association when oil development was proposed for Lancaster Sound. The Igalirtuuq Steering Committee, consisting of representatives of the Association and the hamlet council, proposed the conservation site in 1990 but little happened until 1992 when funds from the Arctic Environmental Strategy helped push the plan ahead.

Joelie Sanguya, chairman of the steering committee, says: "We wanted to protect the whales. We wanted control over the resource and we wanted to keep the environment clean. A National Wildlife Area came closest to meeting our goals."

The area, 120 kilometres south of Clyde River, is an important feeding and breeding site for the Baffin Bay-Davis Strait whales. It is also nominated to be designated as a Biosphere Reserve which is reserved for endangered ecosystems in the world.

The Arctic Environmental Strategy provided funds to help with the consultation and research to develop the management plan, and supported a study to define the bowhead's critical habitat.

Creation of the Wildlife Area has been endorsed by Clyde River residents and subsequently approved by the Baffin Regional Hunters and Trappers Committee, and the Nunavut Wildlife Management Board. The proclamation of the area is expected in the fall of 1995.



- The proposed Igalirtuuq National Wildlife Area, 193 kilometres south of Clyde River, will protect the dwindling population of bowhead whales. Community action on the conservation project began 10 years ago. The Igalirtuuq Steering Committee proposed a protected area in 1990. Funding from the AES allowed for the development of plans and mobilized support from residents in the area. The location has also been nominated as a National Wildlife Area and a Biosphere Reserve, a designation reserved for endangered ecosystems in the world.

The Northern Information Network: the North's own information system

Distance, the physical barrier that often stood between the North and technological progress, has been reduced. Access is now available to electronic networks such as Internet, although this is still limited in the North.

The Northern Information Network (NIN) was created as part of the Arctic Environmental Strategy. As part of the information highway, the NIN Directory describes about 485 geographically referenced, digital databases containing northern information — both scientific and traditional. It incorporates a QUIKMap software capacity which allows mapping of areas covered by each database. Approximately 80 percent of the databases are held by the federal government. The others are owned by various organizations including non-governmental organizations, businesses and universities.

The directory is a key reference source for use in resource management, economic development, land-use planning, wildlife management and other research initiatives. A concerted effort has been made to include traditional environmental information which can play a role in planning decisions along with scientific data.

Salmon Watched, Counted at Mayo

Mayo-area residents who are concerned about apparent dwindling stocks are watching and counting salmon in the Stewart River System.

The Stewart Valley Salmon for the Future Society, through funding from the Community Resource Management Program of the Arctic Environmental Strategy, is conducting surveys on the population of salmon, salmon fry, other fish species and predatory birds that live along the river. The primary goal is to assess the potential to restore the chinook salmon population.

Old-timers remember abundant runs of chinook and chum salmon. Residents now say the population continues to drop and the fish are smaller. After the news about the east coast fisheries, there's an urgency attached to protecting the salmon.

The Society wants to increase awareness of the biology and importance of the salmon as well as to involve local residents in the protection of the fish.

Part of the program involves a study of chinook fry rearing in the Mayo River which was conducted over six months and ended last October. A trap line of 20 wire baskets was baited with walnut-sized portions of salmon roe in perforated plastic bags. Traps were checked every 24 hours and the weight, length and sex of the fry were recorded.

Another element of the survey was a six-week count of salmon heading upstream. A V-shaped weir was placed in the river over a white board which made counting the fish easier. The spot was watched 24 hours a day, creating jobs for local residents.

Some positions were filled by high school students with an interest in biology or natural resource management. Four successful candidates were from the Nacho Nyak Dun First Nation.

In addition to making information available to the community through a semi-annual newsletter, a salmon education program is available for human small fry: Grade one students.

The NIN directory can be accessed on-line or downloaded from the NIN Bulletin Board onto diskettes for review and use on personal computers.

The NIN Bulletin Board, accessible through a 1-800 number by those working on AES projects or requiring AES information, provides easy and rapid communication among participants pending the widespread use of Internet in the North. The Bulletin Board allows users: to communicate through E-Mail; to send and receive public messages; to enter on-line conferences; to download directories and updates; to access user manuals and information files, AES reports, announcements and other documents; and to enter forums for discussion and communication among AES partners and NIN users on northern resource planning and sustainable development.

Under the Arctic Environmental Strategy, other databases have also been created. For example:

- At the Fort Providence Deh Gotide Council office, the database includes information on all traditional Aboriginal land use in the region. In the second year of a three-year CRMP project, Chief Greg Nyuli says the database includes "all our traditional land-use maps that detail our hunting areas, fishing areas, and our spiritual and historical areas. As more information comes in, we'll pump it into the system." The database is a key tool for the Fort Providence Resource Management Committee in managing the band's traditional lands.
- The Dene National Office in Yellowknife and the Dene Cultural Institute in Hay River are developing an environmental information database that can be accessed by Dene throughout the

North. Carole Mills, Acting Environment Manager for the Dene Nation, says the first layer of information in the database will relate to the Arctic Environmental Strategy, but other material will be added. The Cultural Institute has also developed a bulletin board system. For those Dene who don't have a computer, a fax-back capacity has been built into the system. "It's exciting stuff," says Mills.

With so much information relating directly to daily life available on the information highway, gaining the skills to use computer technology is a necessary progression. The ability to access vast amounts of information, knowledge and technology will help northern residents and businesses compete on an equal footing with others throughout the country.

INTERNATIONAL ACTION

Canada is a leader among circumpolar nations which have adopted a major initiative for protecting the Arctic environment: The Arctic Environmental Protection Strategy (AEPS). Other circumpolar nations are Denmark (Greenland), Finland, Iceland, Norway, Sweden, Russia and the United States. Aboriginal groups are also participants, including the Inuit Circumpolar Conference, the Saami Council and the Association of Indigenous Minorities of the North, Siberia and the Far East of Russia.

The transboundary nature of contaminants is one of the problems being studied under AEPS. Industrial regions thousands of kilometres away are the sources of much of the contamination in the Arctic. Pollution is carried to the North by air and ocean currents, and north-flowing rivers. This reality expands Canada's challenge and has given it a key role among the eight circumpolar

nations. These nations have adopted the AEPS and its objective of co-ordinating national policies and programs. The goals are:

- to protect the Arctic ecosystem;
- to support sustainable development;
- to recognize the needs of Indigenous peoples;
- to monitor, assess and report on the state of the environment; and
- to identify, reduce and eliminate pollution.

Canada is the current host country of the AEPS, and has held successful meetings of senior officials at Lac Carling in May 1994 and Iqaluit in March 1995. The ministers' meeting will take place in the western Arctic in March 1996.

The information on Arctic contamination gained from the Canadian AES Action on Contaminants Program and the circumpolar Arctic Monitoring and Assessment Program supports the work of the Working Group on Persistent Organic Pollutants of the United Nations Economic Commission for Europe. This group will look into the international control of these substances.

CONCLUSION

The Arctic Environmental Strategy is a model for the rest of Canada in that it illustrates how to bring about change that not only has the support of an entire region but its full-fledged participation. It was implemented with a sensitivity that reflects the fragile nature of the Arctic environment.

Partnership is the crucial element. The five northern Aboriginal organizations are members of the AES Partners Committee and participate in all program decision-making.

Through this co-operative approach, a high level of public awareness of environmental issues has been created in the North, and the remedial actions undertaken have brought economic growth through employment and contracted work.

The partners have demonstrated that sustainable development is possible and practical. Virtually every Yukon and NWT community is involved in AES projects, and Aboriginal organizations are full partners in decision-making. Among the accomplishments are:

- clearer identification of the scope and sources of contaminants;
- Canadian leadership in international control of contaminants;
- waste sites have been identified and 175 cleaned up in 1994-95, most by local people;
- water quality and water quantity stations have been established and 49 area-specific water studies have been done in communities;
- 87 communities have projects under way, 45 communities have 260 environmental action projects and 42 others are undertaking resource management projects; and
- the establishment of the Northern Information Network as a key reference source in resource management, economic development, land-use planning, wildlife management and other research.

The impacts of the strategy include:

- increased environmental awareness among target audiences, including northerners, territorial governments, Aboriginal organizations, environmental groups, industry, media and other circumpolar nations;
- active public support for and participation in AES programs;

- the establishment of trust between the strategy proponents and northerners;
- positive media attention;
- the establishment of expectations for addressing environmental impacts and addressing land-use planning requirements; and
- increased awareness of environmental concerns and issues.

What is the result? Action that has gained a momentum in the North, transcending land claims, jurisdictional questions and property rights. Northerners have created an awareness that environmental degradation can be reversed and, little by little, the vast north-land can be regained and restored for future generations.

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Grâce à cette approche concrète, un haut niveau de sensibilisation aux questions environnementales s'est répandu dans le Nord, et des mesures correctives ont amené la croissance économique en créant de l'emploi et en offrant du travail à contrat. Les partenaires ont démontré que le développement durable était possible et préférable. Presque toutes les collectivités du Yukon et des Territoires du Nord-Ouest partagent la même vision : une communauté décoloniale à des projets environnementaux qui respectent l'environnement et qui sont des partenaires à part entière dans la prise de décisions. Au nombre des associations qui ont soutenu ce processus, il y a les organisations autochtones qui ont joué un rôle prépondérant dans la définition de la stratégie, et les organisations qui ont contribué à la mise en œuvre de la vision. Ces deux types d'organisations ont travaillé ensemble pour créer une communauté qui respecte l'environnement et qui est engagée dans la prise de décisions. Au nombre des partenaires qui ont joué un rôle prépondérant dans la définition de la vision, il y a les organisations autochtones qui ont joué un rôle prépondérant dans la définition de la vision, et les organisations qui ont contribué à la mise en œuvre de la vision. Ces deux types d'organisations ont travaillé ensemble pour créer une communauté qui respecte l'environnement et qui est engagée dans la prise de décisions.

La stratégie pour l'environnement critique est un modèle pour le reste du Canada en ce qu'elle illustre qu'il est possible de changer les choses non seulement avec l'appui de toute une population, mais également avec la sensibilité qui réflérit la nature fragile de l'environnement arctique.

CONCLUSION

- L'acquisition d'une connaissance plus précise de l'énergie et des sources des matières du leadership canadien en contaminateurs;
- L'exercice du leadership canadien des pratiques de l'énergie et des sources des polluants;
- Le recensement des déchets et le nettoyage de 175 d'entre elles en 1994-1995, primairement par des gens du milieu;
- L'établissement de stations de contrôle de la qualité et de la quantité d'eau et l'exécution de 49 études portant sur des zones précises dans des collectivités;
- Le lancement de projets dans 87 collectivités, dont 260 projets environnementaux dans 45 collectivités et des projets de vires, dont 45 collectivités et des projets de gestion des ressources dans 42 autres;

- protéger l'écosystème arctique;
- appuyer le développement durable;
- reconnaître les besoins des peuples indigènes;
- reconnaître l'état de l'environnement et évaluer l'état de l'environnement et faire rapport à ce sujet;
- débiter, réduire et éliminer la pollution.

Les caractéristiques transfrontalières des contaminations sont l'un des problèmes que vise la SPFA. Des régions industrielles situées à des milliers de kilomètres sont la source d'une grande partie de la contamination de l'Arctique. Ce sont les courants atmosphériques qui soulèvent les particules dans l'atmosphère et les déposent dans les régions polaires. Ces particules sont alors transportées par les courants atmosphériques et déposées dans les régions polaires, où elles se déposent sur la glace et les sols. Ces particules peuvent contenir des polluants tels que le soufre, le carbone et les métaux lourds, qui peuvent entraîner des effets négatifs sur la faune et la flore arctique. Les particules peuvent également contribuer à la réchauffement global en absorbant la lumière du soleil et en la réfléchissant vers l'espace. Les effets de ces particules sur l'environnement arctique sont encore mal compris, mais il est clair qu'elles ont un impact significatif sur la santé et la survie des espèces arctiques.

ACTION A L'ECHELLE INTERNATIONALE

Coume on peut avoir accès à tout d'information pour l'autoroute de l'information, apprendre à utiliser la technologie informatique est une étape nécessaire. La capacité d'accéder à de grandes quantités d'informations, de sauvegarder et de technologie aidera les résidents à faire connaissance sur un pied égal avec leurs homologues dans le reste du pays.

dan la région. Ce projet de trois ans, qui s'inscrit dans le PGR, en est à sa deuxième année et, selon le chef Gref Nuyli, la base de données connaît toutes les trahes, telles que les lieux de chasse et de pêche et les lieux de pêches et de chasses. «Nous y soumettons plus d'informations à mesure que nous l'obtiendrons», a-t-il précisé. La base de données est un outil de pour le Comité de gestion des ressources de Forêt Providence en ce qui concerne la gestion des terres ancestrales

Le saumon est surveillé et compété à Mayo

La Société décrit le sensibilisation à la biodiversité comme la sensibilisation à la performance du saumon. La biodiversité est la performance du saumon ainsi que la participation des gens du milieu à la protection du saumon.

Les années se souviennent des moments abonnés de summan quinze et Kéra. Les résidants d'îles marlaines qui les sticks combinaient de tenu de ce qui se passe dans les îles. Compte tenu de ce que le poisson est plus petit. Comme celle est, il suffit de rentrer à la propreté du

Grâce au financement obtenu dans le cadre du programme de gestion des ressources communautaires de la Stewart Valley pour l'environnement australien, la Stewart Valley Salmon for the Future a récemment obtenu un financement de la Fondation de la nature pour la construction d'un nouveau pont en bois à Stewarton. Ce pont sera construit à l'endroit où l'ancien pont en bois a été détruit par les inondations de 2001. Le pont sera construit avec des matériaux durables et résistants à l'eau, et sera accessible à tous les utilisateurs de la rivière. Le pont sera également accessible aux personnes à mobilité réduite et sera doté d'un système de sécurité pour les piétons. Le pont sera terminé dans les prochaines semaines et sera ouvert au public dans les prochaines semaines. Le pont sera une amélioration importante pour la sécurité et la sécurité des piétons sur la rivière. Le pont sera également accessible aux personnes à mobilité réduite et sera doté d'un système de sécurité pour les piétons. Le pont sera terminé dans les prochaines semaines et sera ouvert au public dans les prochaines semaines.

Au bureau du Conseil Déch Goûte de Fort Providence, une base de données renferme des renseignements sur toutes les utilisa- tions des terres autochtones anciennes et

D'autres bases de données ont également été développées dans le cadre de la Stratégie pour l'environnement arctique. En voici quelques exemples :

Le manuaire du RIN peut être consulté en direct au télécharge sur des disques depuis le tableau d'affichage du réseau en vue de son examen et de son utilisation sur des ordinateurs personnels.

La manière est un ouvrage de référence clé en matière de gestion des ressources, de développement économique, de planification de l'utilisation des terres, de recherche et d'autres domaines de la science et de l'industrie. On a aussi un effort concrète pour y inclure l'horticulture et les domaines scientifiques, influer sur les décisions de planification.

Là distance, jadis l'obstacle qui écartait le Nord des Progrès techniques, n'est plus aussi grande. On a maintenant accès à des réseaux électromagnétiques tels qu'Internet, même si cela est encore limité dans le Nord.

Le Réseau d'information nordique : système d'information propre au Nord

• La réserve faunique nationale d'Igahitukua, qui est proposée de créer à 193 kilomètres au sud de Clyde River, projégera la population en déclin de baie Miles boréales. La collectivité travaille à la réalisation d'un territoire qui propose de créer une zone protégée en 1990. Le financement obtenu en vertu de la Stratégie a permis d'élaborer des plans et d'obtenir l'appui des résidants de la région. Il est en outre proposé que la réserve faunique nationale soit reconnue comme réserve de la biosphère, désignation qui n'est attribuée qu'aux écosystèmes vitaux du monde.

Les collégiennes ont fait preuve de créativité et d'innovation par les projets qu'elles ont proposés et mis à exécution. Leur taux de réussite est impressionnant.



Une mission d'une durée de dix ans visait la réorganisation des bascvinces belges dans la fin en 1995 avec la création de la région Flandre-Orientale dans le cadre de la réforme fédérale de 1999. La population de la partie belge de l'île de Brabant a diminué drastiquement au cours de la dernière décennie, mais l'île reste toujours la plus peuplée des îles de la mer du Nord.

Les balises nagent en sécurité

VOL ET D'ACTION SUR L'INTEGRATION DE L'ENVIRONNEMENT ET DE L'ECONOMIE

À Fort Good Hope, l'intermatriation obtenue au cours des périodes locaux est combinée aux résultats de la recherche scientifique pour établir le profil d'activités, comme le développement pétrolier, qui pourraient avoir des répercussions sur la quantité de possessions et leur qualité.

par exemple, les prévisions d'inondation dans les établissements. La collecte de données a amélioré, par exemple, les prévisions à court terme.

Quarante-cinq collectivités ont participé à 260 projets environnementaux concernant elles-mêmes et 42 autres ont entrepris des projets de gestion des ressources.

Grâce au Programme de gestion des ressources communautaires (PGRc), au Programme d'action environnementale (PAA) et au Réseau d'information nordique (RIN), les collectivités nordiques peuvent maintenir l'élaborder et mettre en oeuvre leurs propres projets. Ces programmes mettent l'accent sur le partenariat et la responsabilité locale libres de toute formalité administrative.

Realisations:

Objectifs : Outfit aux collectivités nordiques des débou- chés économiques qui s'appuient sur les valeurs, les connaissances et les ressources tra- ditionnelles, et prendre de meilleures décisions en les fondant à la fois sur les connaissances scientifiques et traditionnelles.

Atin de recueillir des données de base et de surveiller les conditions environnementales, 67 stations de contrôle de la qualité de l'eau, 22 stations de contrôle de la quantité d'eau et 50 postes d'echantillonnage de la négocier ont été

parvenant dans le Nord. La lagune dont se tient ce développement peut aussi influer sur la piégeage, les stocks de poisson, les crues primaires et la circulation des marchandises.

Les dommages sur les conditions météorologiques acquièrent de plus en plus de valeur avec le temps. Avant que cette étude soit faite, le MANG se servait de renseignements plus généraux fournis par les stations météorologiques régionales.

almita, Nmisivik, Giant et Cullation Lake. Ces stations fournissent des données locales des domaines précis qui servent à calculer le taux d'évaporation de l'eau des bassins de décanalation.

L'exploitation de mines s'appuie sur des données sur leur emplacement

Par exemple, le fleuve Yukon était à son plus haut niveau en 1995, toutes les démodations au printemps de 35 ans, on attendait pas de modérations au printemps de 1995. Toutefois, de fortes pluies, des dégels souterrains et d'autres conditions avantageuses pour la croissance primaire. On s'empêtrera aussi à créer de nouveaux modèles de prévision des inondations pour Marsh Lake, Ross River et Mayo.

Les données historiques permettent de prévoir les inondations et les mouvements des glaces

Quelque 85 p. 100 du sol canadien est irrigué par des rivieres qui coulent vers le Nord. Il s'ensuit que les activites qui se developpent dans le sud du pays peuvent influer sur la qualite de l'eau dans le Nord. Le developpement du bassin du fleuve Mackenzie, par exemple, pourrait avoir d'importantes repercussions sur la qualite de l'eau et la quantite d'eau

lors de séances justifiant plus de 15 minutes d'évaluation de l'évaporation de l'eau des



Le 8 mai 1991, Old Crow est alevé par une fondation.



est maintenant en mesure d'établir le niveau d'mercrede dans les positions et les sédimens. D'autre part, le cadre du volet d'action sur l'eau de la Stratégie 49 études spéciales ont été effectuées, dont 32 cours de la demière amme, qui portait sur des questions telles que la pollution transfrontalière des eaux usées, l'eau potable et les effluents des usines de pâtes à papier et des mines.

« Ce sont eux qui érendent les mètres, explique-t-elle. Ils sont donc les mieux placés pour connaître la qualité de l'eau et du poisson.»

Ensuite partie de la stratégie pour l'environnement actuel, l'approche récine à Fort Good Hope rompt avec les méthodes traditionnelles qui consistent, pour les scientifiques, à venir sur place, à prélever des échantillons puis à quitter l'endroit, pour les scientifiques, à venir sur place, à prélever des échantillons puis à quitter l'endroit, à collecter des deux pour idéger leur rapport. C'est les deux fois, c'est la collectivité qui dirige l'étude.

À Port Good Hope, des scénographies se basent sur des histoires de péche dans le cadre de leur étude environnementale de la qualité du poisson et de l'eau sur le fleuve Mackenzie.

Des études combinées d'expérience et d'echantillonnage pour surveiller la qualité du poisson et de l'eau

Le Laboratoire marin du MAMIC pour les T.N.-O., à Vellekominic, seul établissement d'analyse de l'eau dans le Nord, a maintenant une plus grande capacité. Le laboratoire agrandit

Etendre les réseaux de contrôle de la qualité de l'eau et de la quantité d'eau et multiplier les établissements dans le Nord ainsi qu'effectuer des études exhaustives de l'eau en réponse aux préoccupations des collectivités.

VOLÉT D'ACTION SUR LEAU

Les collectivités ont accru leur expérience de la gestion des affaires, dont la passation de contrats, l'approbation de demandes et le processus d'appel d'offres. Ce savoir-faire sera très utile dans les années à venir.

Ce sont des gens du Nord, y compris de nombreux travailleurs autochtones, qui ont fait beaucoup de travail. En travaillant à plusieurs projets, nous avons appris à nous adapter à la situation dans le traitement de déchets dangereux tels que l'amianté et les BPC.

Le travail accompli aux stations abandonnées du réseau DEW illustre les dimensions du problème dans les régions où il n'existe aucune réglementation de l'utilisation des terres territoriales avant 1972. La première des 42 stations du réseau DEW, dont 21 sont fondées au MANG, a été complètement nettoyée. Les fonds ayants servi au nettoyage des stations du réseau DEW ont été administrés par le biais du Programme d'action sur les déchets de la Stratégie pour l'environnement articulée. On y a ramassé 7 000 barils de carburant qui fuyaient de même que les débris de structures contamинées par les BPC et l'amiant. Parallèlement, les travaux d'évacuation et de nettoyage des matières dangereuses se sont poursuivis aux autres stations du réseau DEW relevant du MANG.

La culture communautaire a gagné des douzaines d'autres localités et les résidants ont révélé des dépôts de déchets isolés qui n'avait pas encore été démembrés.

Les Premières nations ont été invitées à proposer des changements dans le cadre du processus de planification. Les projets de planification sont alors examinés et évalués par rapport à leur conformité avec le MAINC, et une décision est prise sur les déchets de la stratégie pour l'environnement arctique.

Selon le gestionnaire du projet, John Mitchell, les membres de l'équipe ont été choisis en fonction de leur passion pour l'enseignement et leur capacité à travailler en équipe. Les membres ont également été sélectionnés en fonction de leur expérience dans le domaine de l'éducation et de leur capacité à travailler avec les enfants. Les membres de l'équipe sont tous diplômés en enseignement et ont une expérience de travail dans l'éducation. Ils sont également tous passionnés par l'éducation et ont une volonté de faire une différence dans la vie des enfants. Les membres de l'équipe sont tous diplômés en enseignement et ont une expérience de travail dans l'éducation. Ils sont également tous passionnés par l'éducation et ont une volonté de faire une différence dans la vie des enfants.

Les Premières nations s'attaquent aux déchets

M. Garrel crie son grand-père, qui lui encourage à engager des amis entre eux : « Je n'arrive pas mieux que les autres dans la nature pour en tirer la beauté et l'ordre. » Mon grand-père disait toujours que si on ne fait rien, on n'a pas le droit de se plaindre. »

«[L]es étaients dans un état affreux», précise M. Garrels qui désigne à Léonie Thibavik, pour des raisons de sécurité, une autre personne qui a été brûlée par un feu de bûches dans la même maison. M. Garrels a été brûlé lui-même, mais il n'a pas été blessé de manière aussi grave que les deux autres. Les deux autres personnes qui ont été brûlées ont été évacuées par les pompiers et sont dans un état stable. Les pompiers ont également évacué une personne qui a été blessée dans un accident de la route.

L'an dernière, M. Garrelts et 14 élèves ont nettoyé les zones de l'empire à la pêche à Wimington Bay sur la rivière Akmania. Cet été annexe, il s'est passé de deux élèves. Il s'est joint à George Hakongak pour nettoyer une zone de l'an prochain, il se propose de nettoyer des îles empêtrées dans la rivière lac Seashell.

Dans la toundra, il faut ajouter
Les actes aux paroles

La sensibilisation du public et l'action communautaire ont grandement contribué aux programmes improductifs qui ont été planifiés du nettoyage de décharges dans l'archipel. Le niveau élevé de sensibilisation suscité des initiatives comme celles de l'association Rawley Garde, de Cambodge Bay, qui, avec l'aide de ses élèves, a été le fer de lance de projets de nettoyage. Depuis trois ans, les élèves se font porteurs de messages sur la protection de l'environnement à leur famille et à leurs camarades.

Commentaires :

Une évaluation environnementale, permettre à étape d'un projet de nettoyage, à être effectuée à toutes les anciennes stations du réseau DEW.

Le sol contamine par des BPC a également été nettoyé à Sarepta Lake et à Peacock Point, tandis que le travail préparatoire a été fait à une station de communication sur Little Resolution.

«Les murs d'un des bâtiments étrangers contam-
més par des BPC», affirme M. Samantrier.
Ceraines zones autour du bâtiment avaient une
concentration excessive de BPC. Des experts du
Royal Roads Military College se sont occupés de
leur nettoyage.

Les barrages sont maintenant dispersés, tout comme un convoyeur de gravière, un entrepreneur, des commandes et le contenu de deux réseaux de commandes et de 2 000 gallons chacun. Plus de 40 personnes vendent de Paulatuk et de Tuktoyaktuk, dans la région vive par le règlement de la revendication des Inuit, qui rapidement fait disparaître les débris de l'embâme. C'est le premier de 42 émbarcements du

Horizon et abandonné il y a 30 ans. Thoron et réseaux DEW située le long de la rivière au nombre des signes les plus visibles d'une sta- coulère des bous sur la lourde arête due, étaient qu'importe à 100 mètres, dont certains avaient

Le Legs du réseau DEW :

Des barques transportent des barils provenant de décharge.



Un autre résultat positif de ce projet est qu'une douzaine d'étudiants ont reçu de la formation en manutention de matériels dangereux et en opérations maritimes pendant la campagne de 1994. «Les étudiants qui participent au projet ont soit d'apprendre et soit spontanés. Ils disent des choses qui me rendent plus conscient de l'environnement, je ne m'assis jamais rendu compte qu'il y avait tant de déchets», deux autres étudiants ont travaillé avec M. Newman à titre de matelots stagiaires. Peut-être qu'un autre réve est né.

«C'est un succès complet», a-t-il conclu après un été de remorquage. Au nombre des sites nettoyés se trouvait les mines abandonnées des îles Outpost, de De Stalaffan et de Copper Pass.

M. Newton s'est joint à Travaux publics Canada en 1981 à titre de metteur sur le *Hugh A. Young*, revant d'en être un jour le capitaine.

place sur le Grand lac des Esclaves l'été dernier, son rêve était devenu une réalité.

Le nettoyage fait d'un rêve une réalité

175 décharges ont été nettoyées.

On a dénombré jusqu'à 1 256 décharrages, dont 217 sont jugées dangereuses ou soupçonnées de l'être. On s'attache à ces dernières en priorité. Depuis la mise en oeuvre de la stratégie, il y a 4 ans, 477 décharrages ont été déjoués. Depuis 1994, des groupes autochtones ou des groupes du Nord, des entrepreneurs locaux. En 1994-1995, des groupes autochtones ont été fait par les métis, le gros du travail ayant été fait par les gens du Nord, des entrepreneurs locaux.

Realisations:

Objectif : Eliminer les déchets imalsubres, dangereux et imnestséiques laissés sur les terres de la Couronne dans le Nord.

VOLÉT D'ACTION SUR LES DÉCHETS

Les initiatives de communication qui s'adressent aux résidants du Nord visent à épauler les besoins en leur fournit des renseignements pratiques et en les encourageant à participer à la protection de l'environnement. La plupart de ces initiatives ont été produites par l'entremise de groupes autochtones ou morédiques qui y appliquent leurs connaissances techniques et des stratégies adaptées à la réalité culturelle.

Au cours des deux prochaines années, on emploiera à manière les effets des contaminiants sur la santé et à l'unité de l'information. Certaines initiatives aux résidants du Nord, sur les contaminiants aux résidants du Sud, sur les associations initiatives sont déjà en cours. En 1994, plusieurs centaines de familles enceintes sont associées à un programme de dépistage précoce des malformations congénitales. Yellokwinne Hospital. Ces familles, qui bénéficient des contributions par l'entremise de Makenezie et de Kikimoot, ont accès à une liste de régions du Québec où les prélevements sont effectués dans les hôpitaux de leur sang. Ces résultats sont analysés en vue du dépistage de BPC, de mercure, de plomb et de cadmium.

de BPC et de DDT. Il y a toutefois des questions qui demandent sans réponse, comme celle de savoir si les contaminations environnementaux en général sont en hausse ou en baisse et quelle sont les concentrations dans l'air et dans l'eau. Les humains et leurs effets sur ces dernières.

Il a été signé aux participants qu'il fallait tenir compte des nombreux avantages des aliments traditionnels dans les évaluations officielles de la santé à ce que les collectivités devaient parvenir au processus.

Il ne semble y avoir aucun risque lié à la concrétisation de certains, sauf celle de Ross River où le sol en char de carbone ou égalemement friable dans les régions des îles possèses des régions éduées. La concentration de cadmium dans les régions, sauf celle de Ross River où le sol en char de carbone ou égalemement friable dans les régions des îles possèses des régions éduées. La concentration de cadmium dans les régions, sauf celle de Ross River où le sol en char de carbone ou égalemement friable dans les régions des îles possèses des régions éduées.

Le transport a distance contribue à la pression de l'BBPC, de DDt et de l'acrylamide dans l'environnement du Yukon. Même si divers initiatives ont été prises, les améliorations seront longues à venir, surtout parce qu'il est difficile de contrôler des polluants qui émanent d'autres pays.

- Quels sont les niveaux de contamination dans les tissus humains des populations rurales?
- Est-ce que l'utilisation massive, dans le passé, de certains pesticides tels que le DDT et les BPC contribue à de fortes concentrations de ces substances dans les populations du lac Laberge?
- Les niveaux de contamination dans les échantillons sont-ils en hausse ou en baisse?

au nom de ces personnes souveraines à l'heure
légurent les suivantes :

une basse dose de toxaphène, de BPC et de DDT. L'analyse des sédiments de lacs nordiques, il y a quelques dans les modèles diminue de ce que, semble que l'utilisation de contaminants chlorés encouragent de la part des scientifiques. Il vaut sur les contaminants a un support des nou- veilles estimations de l'effet des nou- sas réponses, le deuxième questionnement avec ce que les principaux questions deviennent

Au deuxième atelier du Yukon sur Les contaminateurs, on signale des progrès et on soulève d'autres questions

Commentaires :

Le exercice 1994-1995 a marqué la fin du travail sur le terrain dans tous les secteurs du volant. L'aktion sur les continents, à l'exception de celui de la Sancé. De plus en plus, on accorde de l'importance à des efforts en vue de l'assassinat des scientifiques recueillis au cours des dernières années ainsi que de communiquer les résultats aux consommateurs du Nord et aux récolteurs d'aliments.

Un programme annuel de plus de 80 projets de recherche a permis d'établir que les polluants transports résiduaires de distance contribuent à une des principales sources de contamination dans l'aridique. La plupart des projets consistait à surveiller les niveaux de contaminants dans les écosystèmes et le sol, de même que chez les animaux et les humains, et à en évaluer les effets.

Realisations:

Evaluer les risques de contamination pour la santé humaine et l'écosystème arctique.

VOLET D'ACTION SUR LES CONTAMINANTS

des éléments échelés aidera à dépasser le sentiment de contamination dans le sang

Ces éléments sont cruciaux à un moment où le changement s'effectue rapidement, accélérée par le règlement de revenus territoriaux et le transfert des contrôles fédéraux aux gouvernements territoriaux. La Stratégie montre que le transfert de partenariats fonctionnels, les partenariats s'unisSENT dans un effort envoiemental soutenu et concrète. La Stratégie se trouve également renforcée par le soutien en bono-
sulte des collectivités et du secteur privé.

- on a établi 90 stations de contrôle de la qualité de l'eau ou de la quantité d'eau et effectué 49 études; des résidants du Nord ont entrepris quelque 360 projets environnementaux dans la région de Lassauisement au recyclage en passant par la sensibilisation; des projets communautaires de gestion des ressources, gérés par les collectivités, inter- gèrent la gestion de l'environnement et de l'économie en conservant les ressources pour l'avenir tout en favorisant le développement économique.
- Aux résidants du Nord, la Stratégie offre des débouchés économiques ainsi qu'un environnement plus sain. Elle s'attache à promouvoir l'emploi de gens du Nord et l'utilisation d'autres ressources du milieu, lorsqu'en cela est nécessaire.



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genuine;

- La tache est norme. L'Arctique occupe 440 p. 100 de la superficie du Canada et compte 86 000 personnes) et largement dispersée.
- A ce jour :
- chaque année, on lance des projets de recherche sur les sources de contaminants, la lagune dont ces derniers parviennent à l'Arctique, le degré d'impregnation des ecosystèmes et ses conséquences;
- en a nettoyé 477, dont plus de 200 étaient des quelque 1 246 décharges reconnues, on soupçonne 600 de contenir des déchets dan-

À ce jour :

- Procure des avantages économiques dans les territoires noridiques;
- Assure l'évaluation du risque due présence-ment les contaminants pour les écosystèmes noridiques et la santé humaine.

Introduction

RAPPORT D'ETAPE AVRIL 1994 - MARS 1995

Stratégie pour l'environnement arctique

ACTION



